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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/827,432	04/06/2001	Alexandre M. Izmailov	VGEN.P-066	6093
7590 10/25/2005			EXAMINER	
Holland & Hart LLP 555 Seventeenth Street Suite 3200 Denver, CO 80201			LY, CHEYNE D	
			ART UNIT	PAPER NUMBER
			2168	

DATE MAILED: 10/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/827,432	<b>Applicant(s)</b> IZMAILOV ET AL.	
	<b>Examiner</b> Cheyne D. Ly	<b>Art Unit</b> 2168	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 05 August 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 10-21 is/are pending in the application.
- 4a) Of the above claim(s) 9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 10-13 is/are rejected.
- 7) ☒ Claim(s) 14-21 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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### **DETAILED ACTION**

1. The art unit designated for this application has changed. Applicants(s) are hereby informed that future correspondence should be directed to Art Unit 2168.
2. Applicants' arguments filed August 05, 2005 have been fully considered but they are not deemed to be persuasive. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn. The following rejections and/or objections are either reiterated or newly applied. They constitute the complete set presently being applied to the instant application.
3. Claims 1-8 and 10-21 are examined on the merits.

### **OBJECTIONS**

4. Claims 14-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### **CLAIM REJECTIONS - 35 USC § 102**

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-8 and 10-13 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Alex et al. (1997) (hereafter Alex).

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7. This rejection is maintained with respect to claims 1-8 and 10-13, as recited in the previous office action mailed February 02, 2005.

8. Alex discloses a method for increasing consensus accuracy in DNA fragment assemblies by directly incorporating aligned ABI trace information into consensus calculations via previously described representation, Trace-Data Classifications (Alex et al. 1996) (Alex, page 1, column 1, Abstract etc., and Introduction §).

9. The inclusion of Alex et al. (1996) is not being used as prior art but only to expand on the cited description of Trace-Data Classifications.

10. Alex et al. (1996) discloses there are four sets of data for a fragment of DNA, one for each of the four fluorescent dye. Each set of base trace-data is composed of about ten to 15 data points representing the intensities (peaks) of the fluorescent dyes (Alex et al. (1996), page 5, column 2, Trace-Data Representation, to page 6, column 2). The data is derived from a highly conserved E. coli genome (target) (Alex et al. (1996), page 10, columns 1-2, Data Sets §). For example, Alex et al. (1996) describes the base calling at regular intervals of trace data. There are usually about ten trace-data points per interval and Figure 2 illustrates the alignment of trace data from the selected interval comprising about ten data points (Alex et al. (1996), page 4, column 2, Base Calling section), as in instant claims 1, 5, and 10, step (a).

11. Alex et al. (1996) discloses trace data associated with a single base may contain a peak, or a valley, or both a peak and a valley. The base is called at a particular point in the trace data – we assign scores for both the peak and the valley that are the closest to this location. These class scores are weighted by proximity to the base-call location. Peaks or valleys that are closer to where the base is called have a relatively higher score than those that are further away. Sometimes we may need to make comparisons among the four sets of trace data associated with a single base call (same type). For this situation, the classification scores are adjusted to reflect the relative difference in intensities (heights) of the peaks or valleys; higher peaks score higher than lower peaks, and lower valleys score higher than higher valleys (Alex et al. (1996), page 5, column 2, Trace-Data Representation §, to page 7, line 13), as in instant claims 1, 5, and 10, step (b).

12. Alex discloses the alignment of E. coli trace data from Alex et al. (1996) (Alex, page 4, column 1, Algorithmic Details, to page 6, Method §), as in instant claims 1, 5, and 10, step (c).

13. Alex discloses evidence of traces (Alex, Figure 4) comprising ACGT which represents a “heterogeneous multiplets” as defined by the specification on page 7. The citation above anticipates the instant claims 2, 3, 6, 7, 11, and 12.

14. There are four sets of data for a fragment of DNA, one for each of the four fluorescent dye. Each set of base trace-data is composed of about ten to 15 data points representing the

intensities (peaks) of the fluorescent dyes (Allex, page 5, column 2, Trace-Data Representation, to page 6, column 2), as in instant claims 4, 8, and 13.

## RESPONSE TO ARGUMENTS

15. On pages 10-11, Applicant argues that the “present invention is distinguishable over the Allex et al. reference because the present invention is directed to a method of aligning data for the purpose of base calling, while Allex et al. relates to a method of aligning nucleotide sequences for the purpose of consensus calling.” Applicant’s argument is not persuasive as discussed below. Allex et al. (1996) has been cited for describing a method, which is utilized in the instant reference, for base calling using trace-data (Allex et al. 1996, page 1, column 1, Abstract etc., and Introduction §). For example, Allex et al. (1996) describes the base calling at regular intervals of trace data. There are usually about ten trace-data points per interval and Figure 2 illustrates the alignment of trace data from the selected interval comprising about ten data points (Allex et al. (1996), page 4, column 2, Base Calling section).

16. Further, the citation of ten trace-data points per interval and Figure 2 reasonably anticipate the limitation of “three or more alignment points.” The data is derived from a highly conserved E. coli genome (target) (Allex et al. (1996), page 10, columns 1-2, Data Sets §). The sequencer calls the base with the highest trace value (Allex et al. (1996), Figure 2) which reasonably represents” a primer peak” and “highly conserved in the target nucleic acid.”

17. Specific to the argument directed to the limitations of claim 1, (b), Allex et al. (1996) discloses trace data associated with a single base may contain a peak, or a valley, or both a

peak and a valley. The base is called at a particular point in the trace data – we assign scores for both the peak and the valley that are the closest to this location. These class scores are weighted by proximity to the base-call location. Peaks or valleys that are closer to where the base is called have a relatively higher score than those that are further away. Sometimes we may need to make comparisons among the four sets of trace data associated with a single base call (same type). For this situation, the classification scores are adjusted to reflect the relative difference in intensities (heights) of the peaks or valleys; higher peaks score higher than lower peaks, and lower valleys score higher than higher valleys (Allex et al. (1996), page 5, column 2, Trace-Data Representation §, to page 7, line 13).

## CONCLUSION

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

19. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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20. This application contains claim 9 drawn to an invention nonelected with traverse, filed May 16, 2003. A complete reply to the final rejection must include cancelation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

21. Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

22. For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199. The USPTO's official fax number is (703) 872-9306.

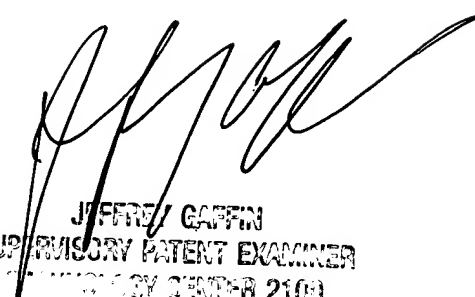
23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to C. Dune Ly, whose telephone number is (571) 272-0716. The examiner can normally be reached on Monday-Friday from 8 A.M. to 4 P.M.



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24. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Gaffin, can be reached on (571) 272-4146.

C. Dune Ly */on*  
Patent Examiner  
10/20/05

  
JEFFREY GAFFIN  
SUPERVISORY PATENT EXAMINER  
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